

## **REMARKS**

### **Status of the Application**

Prior to the entry of this amendment, claims 1-19 were pending in the present patent application. It is noted that in the Office Action dated December 13, 2005 (Office Action), the Examiner indicated that claims 1, 6, 7, and 10-19 were pending. Applicant has assumed that this is a typographic error as it appears that the Examiner examined claims 1-19 and the Applicant had not previously authorized any cancellation of claims. Clarification is respectfully requested.

In the Office Action, the Examiner objected to the drawings; rejected claims 1, and 6-19 under 35 USC 102 as being anticipated by US Patent No. 6,768,106 to Gzara (USP '106); and objected to claims 2-5 and 8-9.

By way of the present amendment, Applicant amends claims 2-5, 8-9, and 16. Accordingly, claims 1-19 are currently pending. No new matter is added by these amendments. Applicant respectfully requests reconsideration and further examination of this application as amended in view of the remarks provided below.

### **Objection to the Drawings**

Applicant provides herewith a copy of the formal drawings submitted to the official draftsman. Applicant believes that these drawings address the Examiner's objections.

### **Claim Objection**

The Examiner had objected to claims 2-5 and 8-9 asserting that parentheticals in these claims are improper. Applicant hereby amends these claims addressing the Examiner's objections. Claim 16 is amended to correct a minor typographical error.

### **Claim Rejections**

The Examiner rejected claims 1, and 6-19 under 35 USC 102 as being anticipated by USP '106. Applicant respectfully traverses this rejection in view of the remarks provided below.

USP '106 discloses a method and apparatus for monitoring characteristics of drilling cuttings and drilling mud to account for interference of the cuttings and mud in formation and borehole fluid measurements, see for example:

The invention relates generally to exploration and production, and more particularly, to a method and apparatus for monitoring and detecting kicks and cuttings-bed formation or drill cuttings "pack-off" while drilling. USP '106, Col. 1, lines 16-20

There remains a need for a technique to measure the properties of the formation and borehole fluid downhole with a single tool in order to detect kicks, cutting bed build-up, or other problems with the borehole fluid. USP '106, Col. 6, lines 17-20

A method is disclosed for determining a characteristic of a mud mixture surrounding a drilling tool within an inclined borehole in which a drilling tool is conveyed. USP '106, Col. 6, lines 26-28

The data from all measurements may be combined with knowledge of the tool response to then accurately yield the properties of both mud and the formation. USP '106, Col. 10, lines 56-59

Such a method and apparatus is applicable during logging-while-drilling and open hole wireline logging, prior to casing the well. There is no indication that USP '106 can be applied to *cased* boreholes. In fact, the primary embodiments of the USP '106 methodology relate to logging-while-drilling and measurement-while-drilling applications in which the boreholes are *uncased*. (see USP '106, columns 9-11 and Col. 21-23)

The Examiner cited Col. 10, line 33 of USP '106 as support for his assertion that "developing one or more cased hole calibrations ..." is disclosed in USP '106. However, Applicant has carefully reviewed this passage and does not see any reference to *cased* holes. Applicant notes that this passage discloses "WL or LWD tool" embodiments. However, it is well appreciated in the art that WL tools are often run in open (i.e., *uncased*) holes. Mere reference to a "WL tool" cannot be interpreted as a cased hole environment.

The Examiner further relies on Figures 1 and 9 of USP' 106 to show the step of "cased borehole calibration relationship." However, Figure 1 shows a borehole 10 having an annulus 12 and does not show any casing in the borehole. Further, as described at column 9, lines 29-34, Figure 1 includes:

... drilling fluid or "mud" is forced by pump 11 from mud pit 13 via stand pipe 15 and revolving injector head 7 through the hollow center of kelly 3 and drill

string 6, and the bottom hole drilling assembly to the bit 50. Such mud acts to lubricate drill bit 50 and to carry borehole cuttings or chips upwardly to the surface via annulus 10.

Accordingly Figure 1 of USP '106 shows a drilling environment and not a cased borehole. Likewise, Figure 9 is a flowchart having no reference to a cased borehole.

By contrast, the present invention teaches a method and apparatus to determine formation density of a cased borehole. More particularly, it teaches a method of accounting for the *casing* in formation density measurements. Accordingly, USP '106 does not teach following features recited in independent claim 1 of the present patent application (emphasis added):

developing one or more *cased hole* calibration ..., and  
using said *cased hole* calibration relationships ....

Likewise, USP '106 does not teach the following features of independent claim 16 of the present application (emphasis added):

... determining formation density in a *cased hole* environment...

In addition, USP '106 does not teach the following features recited in independent claim 17 of the present application (emphasis added):

... using one or more *cased hole* calibration relationships.

Because USP '106 does not teach each and every element of the independent claims 1 and 16, it does not anticipate the present invention as presently claimed. Accordingly, Applicant asserts that the present invention is patentably distinct from the cited art.

### **Conclusions**

In light of the above amendments and remarks, Applicants believe that the present application and the amended claims are in proper condition for allowance. Such allowance is earnestly requested. If the Examiner is contemplating any action other than allowance of all pending claims, the Examiner is urged to contact Applicants' representative, Jody Lynn DeStefanis, at (617) 252-4735.

Other than the fee associated with the petition for a three-month extension of time, which is separately authorized, Applicants do not believe that any fees are required in connection with this response. However, in the event that it is determined that a fee is required, the Commissioner is hereby authorized to charge **Deposit Account No. 19-0615** for any deficiency.

Respectfully submitted,

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